Section II (Remarks)

A. Summary of Amendment to the Claims

Claim 10 has been amended as set forth in the above Complete Listing of the Claims. As amended, the claims are supported by the specification and the original claims. No new matter has been added, as defined by 35 U.S.C. § 132. Specifically, support for the amendment to claim 10 is in the specification, as filed, at page 3, lines 17-24 and page 4, lines 1-9.

Thus, upon entry of the amendments, claims 1 and 3-23 will be pending and under examination.

B. Rejection under 35 U.S.C. §102

In the Office Action mailed March 26, 2010, the examiner rejected claims 1, 3-13 and 15-23 under 35 U.S.C. §102(b) as anticipated by U.S. Patent Application Publication No. 2003/0055146 (hereinafter "Chang et al"), as evidenced by "Lyocell Fiber" and U.S. Patent Application Publication No. 2003/0159620 (hereinafter "Kosan et al"). Applicants respectfully disagree.

Anticipation of a claim requires the disclosure in a single prior art reference of each element of the claim under consideration. (Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987.) Chang et al. fails to disclose every element of applicants' claimed invention.

The cellulosic form of claims 10-16, 18-20 and 22 and the cellulosic forms resulting from the methods of claims 1, 3-9, 17, 21 and 23 provide the functional effect of keeping "… active agents in a textile depot and further to obtain sufficient release of said agents from said depot over a period of time. The released concentrations of said agent should be controllable…" (Specification, page 3, lines 3-13.)

Such function "is reached in combination with the aforementioned discussed method according to the present invention by charging the cellulosic forms, wherein said forms are spun according to the dry-wet extrusion method and having incorporated weakly linked cationic active ion exchangers with active agents." (Specification, p. 3, lines 17-20; emphasis added.)

Applicants claim a cellulosic form and method of making the same, where the product comprises

an incorporated chemically weakly crosslinked ion exchanger (polyacrylates). Because of the weakly crosslinked polyacrylates incorporated into the fibers, the cellulosic form can be loaded with ions or other active agents and the cellulosic form will release these ions or agents in an aqueous medium but will retain its original shape. The cellulosic form itself will not disperse after use or after contact with water. Accordingly, the cellulosic form is capable of reloading and reuse, after initial use.

By contrast, the fiber-containing fabrics of Chang et al. are coated with a binder, which will disperse upon immersion in water and which is not intended for release of active agents upon such immersion in water. However, if agents are present, upon water immersion, the binder of Chang et al. will disperse, and this will cause corresponding release of any agent in a single burst, resulting in a solubilized polymer binding formulation, and separated fabric.

Independent claim 1 recites a method for producing a functional cellulosic form. Claims 3-9, 17, 21 and 23 depend directly or indirectly from claim 1 and, by virtue of their dependency, include all elements of claim 1. Independent claim 10 recites a cellulosic form. Claims 11-13, 15, 16, 18-20 and 22 depend directly or indirectly from claim 10 and, by virtue of their dependency, include all elements of claim 10.

Chang et al. fails to disclose every element of applicants' claimed form or method. The method of claim 1 comprises a step where the cellulosic solution that is extruded has a polyacrylate weakly crosslinked by a multifunctional crosslinker incorporated therein ("…incorporating within a cellulosic solution a polyacrylate weakly crosslinked by a multifunctional crosslinker…"). By the method of claim 1, the incorporation of the specific polyacrylate occurs during the dry-wet extrusion method, and therefore the cellulosic form has the polyacrylate weakly crosslinked by a multifunctional crosslinker incorporated within the spun fibers. Similarly, claim 10 specifically recites "…said form contains an incorporated polyacrylate weakly crosslinked by a multifunctional crosslinker…". Chang et al. fails to disclose or provide any derivative basis for these elements of applicants' claimed invention.

In Chang et al., the crosslinking referred to by the examiner is performed by treatment of substrates with a triggerable, water dispersible cationic polymer binder. Thus such crosslinking is not a result of "incorporated" elements. The treatment of the substrates of Chang et al. results in an adverse effect on the physical characteristics of the textile product, such as stiffening,

reduction of the ability to stretch and, accordingly, a limited ability to process the resulting product. In addition, if the products of Chang et al. are further treated with functional additives (such as described in para. [0103]-[0104], the effect of those additives would be reduced as compared to products resulting from applicants' claimed methods, because the availability of the surface area is small, as compared to the distribution of additives incorporated in the product and distributed throughout cross sections of the product and accessible even within the matrix (e.g., when swelling of the cellulose after immersion into water occurs).

Kosan et al. is cited as providing "evidence that the lyocell spinning process is considered a wet-dry extrusion process" and Lyocell Fiber is cited as providing "further evidence of how lyocell is formed and stated lyocell is formed by an organic solvent (wet) spun and extruded…" However, neither of these references remedies the above-discussed deficiencies of Chang et al.

Accordingly, Chang et al. fails to provide a method including a step where polyacrylate weakly crosslinked by a multifunctional crosslinker is incorporated into a cellulosic form, and Chang et al. fails to provide a resulting form with the polyacrylate weakly crosslinked by a multifunctional crosslinker incorporated within the fibers.

Since Chang et al. does not describe a method or form as set forth in claims 1, 3-13, and 15-23, Chang et al. does not anticipate the claimed invention. Accordingly, withdrawal of the rejection of claims 1, 3-13, and 15-23 under 35 U.S.C. §102(b) as being anticipated by Chang et al. is respectfully requested.

C. Rejection under 35 U.S.C. §103

Claim 14

In the Office Action mailed March 26, 2010, claim 14 is rejected under 35 U.S.C. §103(a) as unpatentable over Chang et al., in view of U.S. Patent No. 5,853,867 (hereinafter "Harada et al."). Applicants respectfully disagree.

Claim 14 depends from claim 10 and therefore incorporates all elements of claim 10. As set forth in detail above, Chang et al. does not anticipate claim 10, as Chang et al. fails to provide a cellulosic form with a polyacrylate weakly crosslinked by a multifunctional crosslinker incorporated within the fibers.

Harada et al. is cited by the examiner as providing the specific percentages recited in claim 14, specifically "Harada discloses the cross-linking agent being present from 0.01-2% by weight [column 5 lines 58-60]."

Chang et al. in view of Harada et al. fail to provide any derivative basis for the claimed invention. Harada et al. describe super absorbent particles adhered to a substrate and not incorporated therein during the production (spinning) of the article. Accordingly, the combination of Chang et al. and Harada et al. fails to provide a cellulosic form with a polyacrylate weakly crosslinked by a multifunctional crosslinker incorporated within the fibers.

Additionally, there would have been no logical reason for one of skill in the art to combine such references. Chang et al. describes a triggerable polymer, which will disintegrate upon immersion in water. Harada et al. describes absorbing polymers which "excel in water absorbing power." (Harada et al., Abstract.) There would have been no logical reason for one of skill in the art to combine the references.

Even if the teachings of Chang et al. and Harada et al. were combined, the resulting product would be a triggerable, disintegrating binder, stabilizing a fabric having absorbent substrates/super-absorbent particles adhered to the surface. The combination would not provide a fiber-incorporated, specific polymer as claimed by applicants.

Based on the foregoing, Chang et al. in view of Harada et al. fails to provide any logical basis for the cellulosic form recited in claim 14. Chang et al. in view of Harada et al. does not render the claimed invention obvious. Accordingly, withdrawal of the rejection of claim 14 under 35 U.S.C. § 103(a) as being obvious over Chang et al. in view of Harada et al. is respectfully requested.

Claims 1 and 3-23

In the Office Action mailed March 26, 2010, claims 1 and 3-23 are rejected under 35 U.S.C. §103(a) as unpatentable over Chang et al., in view of PCT Publication No. WO00/63470 (hereinafter "Buettner et al."). Applicants respectfully disagree.

As set forth in detail above, Chang et al. does not anticipate claims 1, 3-13, 15-23, nor is claim 14 obvious in view of Chang as a primary reference. Chang et al. fails to provide a cellulosic form with a polyacrylate weakly crosslinked by a multifunctional crosslinker incorporated within

the fibers or a method of producing the same.

Buettner et al. is cited by the examiner as "suggest[ing] that lyocell can be formed via a dry-wet extrusion process [abstract] to form highly absorbent forms [abstract]..." and that "[i]ncreased absorption is an important property for the class of products disclosed by Chang including diapers."

Buettner et al. describes addition of particulate, known common ion-exchangers (e. g. Buettner et al., paragraph 10 or claim 1, defining grain-size of exchanger) for ion-absorption. In fact, the corresponding German application (DE 19 917 614) to Buettner et al. is discussed at pages 4-5 of the present application:

> "If, instead of weakly cross-linked cation exchangers, ion exchangers are used on the basis of acrylic acid-divinylbenzene-copolymer-bound carboxyl groups or on the basis of a styrene-divinylbenzene-copolymer bound chelat forming imino-diacetic-acid as described in DE 19 917 614, fibres are obtained, which are comparable in their bactericide effect. However, the capacity for silver ions is less than 50% of the aforementioned weakly cross-linked cation exchangers."

Furthermore, Table 1 at page 5 of applicant's specification provides a showing of differences in the capability of absorption of heavy metal ions (Ag) and in the equilibrium concentration are shown. On the one hand, the absorption capacity of heavy metal ions in commercially available ion exchangers as used by Buettner et al. is much lower than for weakly-crosslinked ion exchangers and on the other hand the release rate of bound ions in commercially available ion exchangers is much faster than in weakly crosslinked. Accordingly, Buettner et al. is silent about a textile depot and a controlled release of the ions over a long time period. These effects are demonstrated by applicants' cellulosic forms, as shown in Tables 1 and 3 and Examples 4 and 5. These comparisons demonstrate that higher crosslinking reduces the quantitative amount of bound heavy metal ions substantially and furthermore the release of ions cannot be controlled.

Based on the teachings of Buettner et al., one of skill in the art would not have expected a weakly cross-linked polyacrylate to have any beneficial effect.

Furthermore, Chang et al. demonstrate that decreasing the amount of cross-linkage will improve the disintegration properties, providing a product that will decompose in water. Chang et al. also do not discuss ion-release properties and Chang et al. provide products with binder only added to the fibers, rather than incorporated.

One of skill in the art would not have combined Chang et al. and Buettner et al., as alleged by the examiner. However, even if such combination was made, one of skill in the art would not have been inclined to lower the level of cross-linkage as shown in Buettner et al., because such reduction would, according to Chang et al., result in more water-soluble structures. Furthermore, Buettner et al. teaches away from a resulting structure with any ion release function, as Buettner et al. describes ion-exchangers as absorbents.

Based on the foregoing, Chang et al. in view of Buettner et al. fails to provide any logical basis for the cellulosic form or method recited in claims 1 and 3-23. Chang et al. in view of Buettner et al. does not render the claimed invention obvious. Accordingly, withdrawal of the rejection of claims 1 and 3-23 under 35 U.S.C. § 103 (a) as being obvious over Chang et al. in view of Buettner et al. is respectfully requested.

CONCLUSION

Based on the foregoing, all of applicants' pending claims 1 and 3-23 are patentably distinguished over the art, and in form and condition for allowance. The examiner is requested to favorably consider the foregoing and to responsively issue a Notice of Allowance.

No fees are believed to be due for the filing of this paper. However, should any fees be required or an overpayment of fees made, please debit or credit our Deposit Account No. 08-3284, as necessary.

If any issues require further resolution, the examiner is requested to contact the undersigned attorneys at (919) 419-9350 to discuss same.

Respectfully submitted,

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